[The values for coefficients *a* and *b* were inadvertently reversed. The correct Table 8.1 is below.]

Table 8.1 Coefficients of the gasoline Vehicle Cost Curves ($a\Delta^2 + b\Delta$) by Class and Time Period.

	Near Term: 2007-2014			Mid Term: 2015-2022			Long Term: 2023-2025		
Vehicle Class	a	b	Upper Limit (%)	a	b	Upper Limit (%)	a	b	Upper Limit (%)
Subcompact Car	0.5171	15.944	42.84	0.4568	11.828	60.22	0.3722	11.596	60.22
Compact Car	0.4793	16.150	38.22	0.5119	9.6537	55.20	0.4137	9.6584	55.20
Midsize Car	0.6007	16.774	42.51	0.4913	13.119	61.61	0.4062	12.542	61.61
Large Car	0.5452	24.678	46.38	0.3775	21.673	68.11	0.3008	20.612	68.11
2-seater	0.7108	16.068	41.59	0.5378	13.494	58.86	0.4424	12.999	58.86
Minivan	0.5494	25.339	43.45	0.3940	21.527	65.13	0.3058	20.599	65.13
Standard Van	0.3015	35.787	51.39	0.2920	26.838	74.23	0.2313	25.547	74.23
Small Pickup	0.6442	21.252	41.91	0.4713	17.846	61.74	0.3746	17.134	61.74
Standard Pickup	0.9102	18.549	45.20	0.7333	14.835	64.50	0.6367	14.441	64.50
Small SUV	0.5994	18.088	43.12	0.4748	14.453	62.55	0.3870	13.869	62.55
Midsize SUV	0.6883	21.132	40.99	0.4919	18.097	61.68	0.3891	17.466	61.68
Large SUV	0.9315	21.900	45.62	0.7493	17.973	64.74	0.6633	17.033	64.74
Prestige Subcompact Car	2.1194	9.1418	23.91	1.4204	7.5307	41.48	1.0979	9.9805	41.48
Prestige Compact car	1.2719	17.337	32.09	0.8952	15.782	50.87	69.51	16.252	50.87
Prestige Midsize Car	1.0962	23.231	36.35	0.6899	22.867	56.69	0.5253	22.299	56.69
Prestige	1.5683	10.001	39.57	1.1182	11.112	58.20	0.9456	11.908	58.20

Large Car									
Prestige 2-seater	1.4837	16.167	35.55	1.0379	15.023	52.99	0.8613	15.060	52.99
Prestige Small SUV	1.0859	21.768	38.30	0.8578	16.678	58.09	0.6877	16.974	58.09
Prestige Midsize SUV	1.1387	24.111	37.87	0.8463	19.658	57.91	0.6785	19.384	57.91
Prestige Large SUV	1.5353	24.701	38.72	1.330	17.723	56.90	1.1713	17.246	56.90

The cost curves were calibrated for individual manufacturers using a method explained in Appendix E. It takes into consideration the fuel economy of a manufacturer's fleet given the horsepower and weight of the vehicles it makes. If a manufacturer's fleet is above the average fuel economy for all manufacturers, given its power and weight, it is assumed that the manufacturer is already making use of some of the advanced technologies used to construct the fuel economy cost curves used in the MDM. If a manufacturer's fuel economy is below the average, it is assumed to have a greater ability to increase fuel economy than reflected in the fuel economy cost curves. If A_m is the adjustment factor for manufacturer *m* from Appendix E, and if the industry average cost curve is $RPE = a\Delta^2 + b\Delta$, then the adjusted cost curve is given by $RPE_m = (1+A_m)(a\Delta^2 + b\Delta)$. The adjustment factors used are shown in Table 8.2 below. Nearly all of the adjustment factors are less than ±10%, indicating a fairly consistent use of technology across manufacturers.

Table 8.2 Fuel Economy Cost Curve Adjustment Factors for Manufacturers

Passenger Cars			**Light Trucks**	
Manufacturer	A_m **Cars**		**Manufacturer**	A_m **Trucks**
DAEWOO	-0.083		ROVERGROUP	-0.121
AMC	-0.076		KIA	-0.072
KIA	-0.070		SUZUKI	-0.051
VOLKSWAGEN	-0.046		PORSCHE	-0.042
HYUNDAI	-0.042		VOLKSWAGEN	-0.027
MAZDA	-0.033		NISSAN	-0.016
SUBARU	-0.018		CHRYSLER	-0.012
SUZUKI	-0.012		MITSUBISHI	-0.010

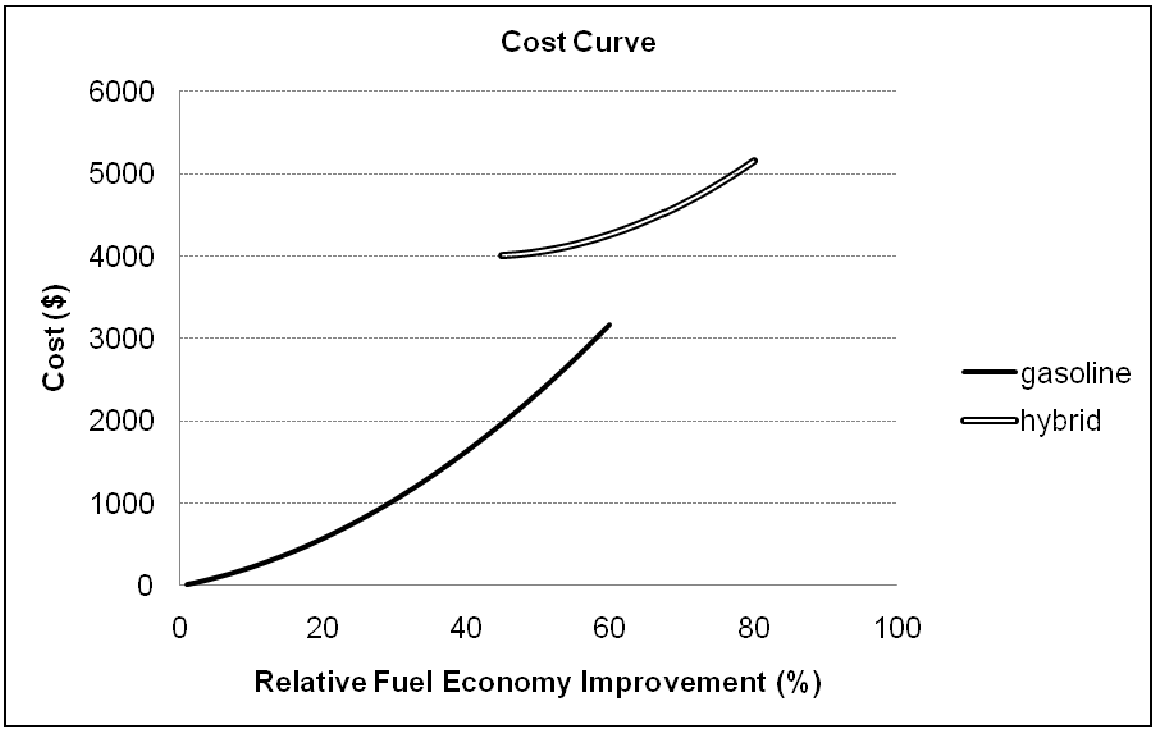

Figure 8.3 Technology cost curves for gasoline and hybrid Midsize cars for 2007-2014

[The incremental cost is relative to 2007 retail prices, not 2016, see corrections underlined below.]

The following procedure is used to convert an ICE to a hybrid vehicle. Take vehicle A as an example. It has a starting fuel economy of 20 mpg in 2007 and a curb weight of 3000 lbs. The fuel economy increases in response to the feebate program. Suppose its fuel economy improves by 50% to 30 mpg in model year 2016 and reaches the upper bound of the gasoline cost curve. In the next redesign year (2020) it has the option to convert to hybrid. If the MDM decides to do so, then there is an incremental cost of $4500 added to the 2007 retail price, and the starting mpg as a hybrid (the origin of the hybrid cost curve) is assumed to be 1.45*20=29 (20 is the mpg in the base year 2007). In 2020, the vehicle will continue improving its fuel economy along the hybrid cost curve until it reaches the optimal point determined by the model, say 35 mpg. The RPE of this vehicle in 2020 will be the RPE in 2007 plus the $4500 conversion cost plus the incremental cost from the origin (29 mpg) to the optimal point (35mpg) on the hybrid cost curve. The calculation of RPE is represented by the following equation:

$$RPE_{ik}(t)=[1-HY_i(t)][a_{ik}(t)(\frac{MPG_i(t)-MPG_i^0}{MPG_i^0})^2+b_{ik}(t)\frac{MPG_i(t)-MPG_i^0}{MPG_i^0}]+$$

$$HY_i(t)[conv\_\cos t_i(t)+a_{ik}^H(t)(\frac{MPG_i(t)-1.45MPG_i^0}{1.45MPG_i^0})^2+b_{ik}^H(t)\frac{MPG_i(t)-1.45MPG_i^0}{1.45MPG_i^0}]$$

where

$MPG_i(t)$: Continuous decision variable, fuel economy of vehicle i in year t (miles /gallon),